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INTRODUCTION.

This REVIEW treats generally the meteorological conditions of the United States and Canada for January, 1888, and is based upon the reports of regular and voluntary observers of both countries. Descriptions of the storms that occurred over the north Atlantic Ocean are also given, and their paths shown on chart i, on which also appear the positions of icebergs and the limits of fog-belts west of the fortieth meridian. The weather over the north Atlantic was seasonable, and no storms of abnormal energy have been reported.

The month may be rated as an unusually cold one over the greater part of the United States, particularly on the Pacific coast, in the plateau region, and in all northern districts, the mean temperatures generally ranging from 6° to 12° below the normal. In the south Atlantic and Gulf states, and in the southern slope, the mean temperatures were normal or slightly above.

In connection with the temperature of the month, the remarkably cold weather in the northwestern states and territories, attending the prevalence of area of high pressure number iii, was an important feature. This extremely cold weather prevailed during the second decade of the month, and some of the minimum temperatures were the lowest recorded since the establishment of Signal Service stations. The minimum temperatures at many stations in the plateau region and on the Pacific coast during the decade mentioned, were similarly without precedent for that region.

The monthly precipitation was decidedly below the normal in Florida, the south Atlantic and east Gulf states, and largely in excess of the average in California. In other portions of the country it was nearly normal.

With this REVIEW is given an annual summary of temperature and rainfall for 1887, with two charts (numbers v and vi) showing, respectively, annual isotherms and departures from normal temperature, and annual precipitation.

In the preparation of this REVIEW the following data, received up to February 20, 1888, have been used, viz., the regular tri-daily weather-charts, containing data of simultaneous observations taken at 133 Signal Service stations and 23 Canadian stations, as telegraphed to this office; 176 monthly journals and 170 monthly means from the former and 23 monthly means from the latter; 307 monthly registers from voluntary observers; 56 monthly registers from United States Army post surgeons; marine records; international simultaneous observations; marine reports through the co-operation of the Hydrographic Office, United States Navy, and the "New York Herald Weather Service;" monthly weather reports from the local weather services of Alabama, Colorado, Illinois, Indiana, Kansas, Louisiana, Michigan, Mississippi, Missouri, New Jersey, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, and Tennessee, and the Central Pacific Railway Company; trustworthy newspaper extracts, and special reports.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean pressure for January, 1888, determined from the tri-daily telegraphic observations of the Signal Service, is shown by isobarometric lines on chart ii.

The mean pressure for January, 1888, is greatest in the upper Mississippi and Missouri valleys, and least in New England and the Maritime Provinces of Canada, there being a difference of 0.54 between the highest (Omaha, Nebr., 30.34) and lowest (Sydney, N. S., 29.80) monthly barometric means. From the upper Mississippi valley eastward the decline in the barometric means is gradual until reaching the seventy-fifth meridian; thence eastward the gradient is remarkably steep, the mean pressure ranging from 30.18, at Albany, N. Y., to 29.80 at Sydney, N. S. To the westward of the Missouri Valley the mean pressures first decrease to 30.1 over the middle Rocky Mountain slope; thence westward they increase to 30.25 in the northern and middle plateau districts, and from this region westward to the Pacific coast there is a sharp decline, the barometric means falling slightly below 30.0 on the north Pacific coast.

The contrast between the highest and lowest monthly mean pressures is worthy of special mention. The average difference between the highest and lowest barometric means for January for the territory embraced by the chart is about .35, and since the establishment of Signal Service stations there has been but one year, viz., 1879, in which the range of mean pressure has equaled that of the current month.

The mean pressure of January, 1888, as compared with that for the preceding month shows an increase in all parts of the country, with the exception of the Canadian Maritime Provinces and the middle and south Pacific coast regions, in which districts there has been a slight decrease, ranging from .01 to .07. Throughout the region between the eighty-fifth and one hundred and second meridians the barometric means ranged from .15 to .24 higher than for the preceding month, the difference being greatest in the upper Mississippi and lower Missouri valleys.

The departures from the normal pressure at the various Signal Service stations are given in the table of miscellaneous meteorological data. In all parts of the country, with the exception of the northern and middle Pacific coast regions, the Canadian Maritime Provinces, and northern New England, the mean pressure for the month is above the normal, the departures exceeding .10 over an extensive area in the interior of the country, and amounting to .15 in the upper Mississippi valley. The stations reporting extreme departures above and below normal are respectively La Crosse, Wis., .17, and Roseburg, Oregon, .08.